The background image is a photograph of a flooded street. In the foreground, there is a large, shallow pool of water reflecting the sky. In the middle ground, several cars are parked or driving on the wet pavement. In the background, there are buildings and utility poles. The overall scene suggests a recent rainstorm or heavy rain.

# Improving the Effectiveness of Stormwater Management in Maine

Report to the 121st Maine  
Legislature by the Maine  
Department of Environmental  
Protection

February 5, 2004



# Maine Stormwater Management Law

- Adopted in 1996
- Rules in 1997 designated:
  - Lakes and coastal waters most at risk from new development
  - Sensitive or threatened lakes and rivers
  - Quality and quantity standards for the above categories
  - Streams were not designated under either category due to lack of data

# Urban Impacts on Streams



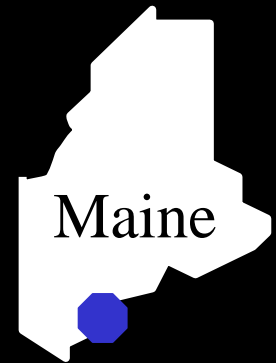
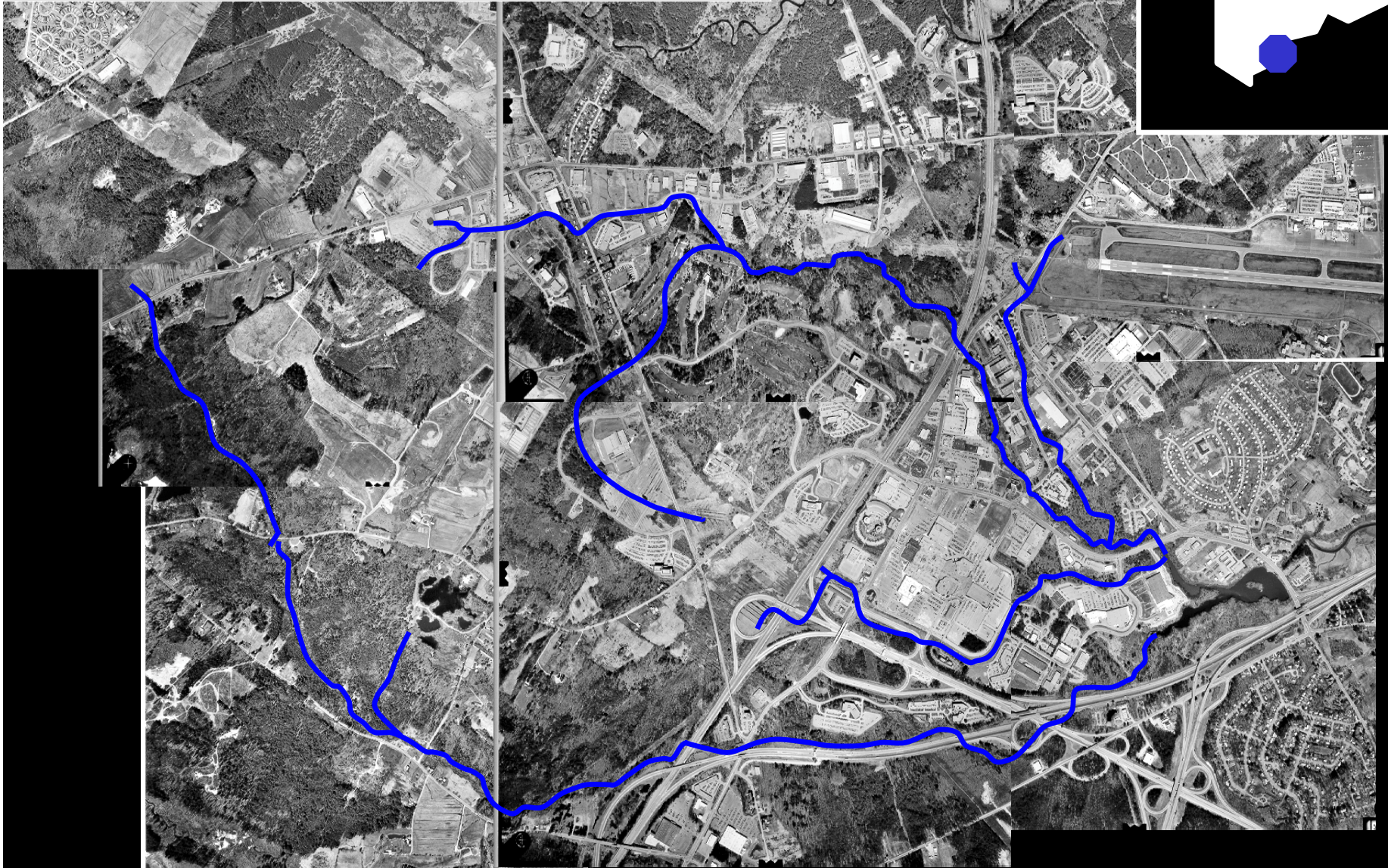


### Long Creek

- coastal
- low gradient
- pool/run
- clay/sand
- primarily in urban area

### Red Brook

- coastal
- low gradient
- pool/run
- sand/clay
- partially in urban area





# Urban stressors on aquatic life in streams

- **Loss of stable habitat as a result of channel instability**
  - **elevated frequency and duration of erosive flows**
  - **loss of access to the flood plain**
  - **channel alterations**



# Urban stressors on aquatic life in streams



- **Elevated temperatures**
  - loss of riparian shade
  - reduced baseflow
  - warm stormwater contributions

# Urban stressors on aquatic life in streams



- **Loss of food, diversity of habitat and velocity due to loss of riparian leaf and woody debris contributions**



# Urban stressors on aquatic life in streams



- **Sedimentation of habitat from upstream channel failures and/or watershed erosion**



# Urban stressors on aquatic life in streams

- **Excessive algae from stormwater nutrients, and possible diurnal DO depressions resulting from algal respiration**





# Urban stressors on aquatic life in streams



- **Toxic effects of stormwater contaminants (metals, hydrocarbons)**

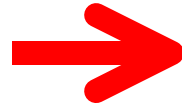
# Effects of urban stressors on aquatic life



- **Loss of temperature and DO sensitive taxa**



# Effects of urban stressors on aquatic life



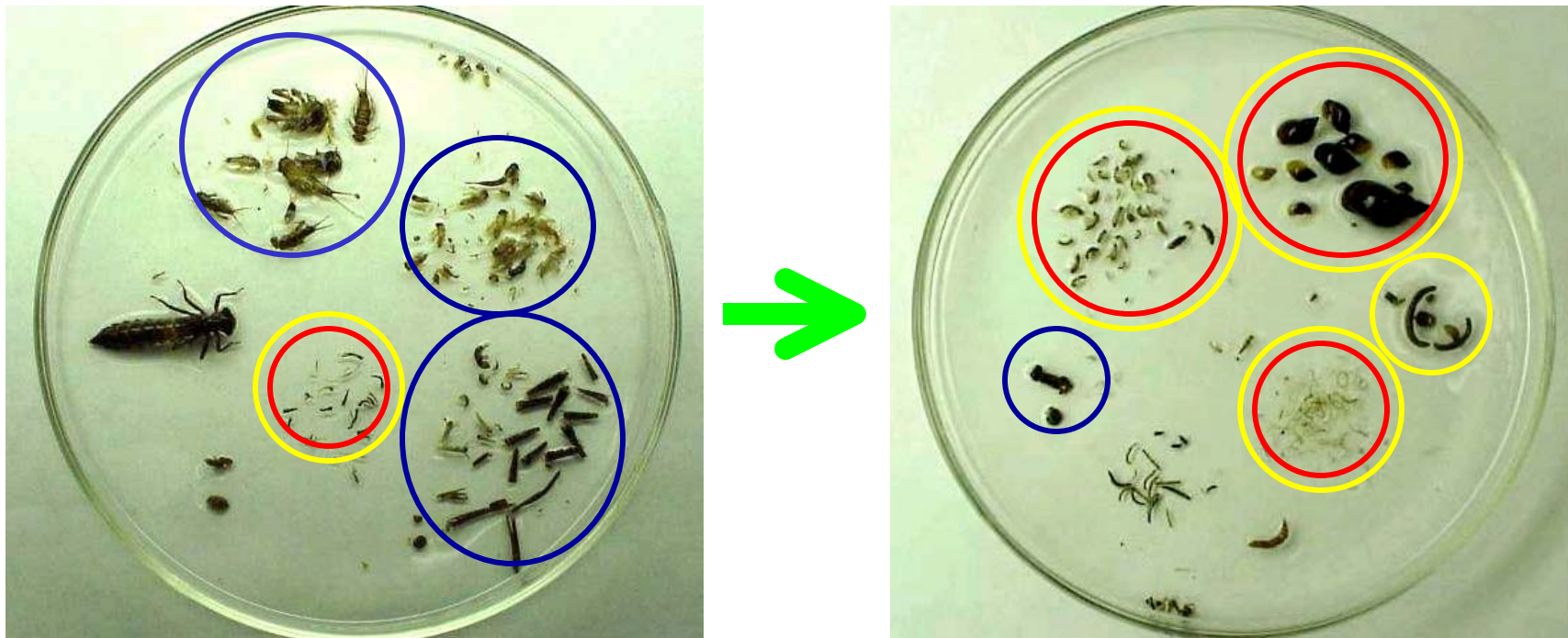
- **Shift to taxa with short life cycles**

# Effects of urban stressors on aquatic life

- **Loss of stream community's ability to process organic matter**



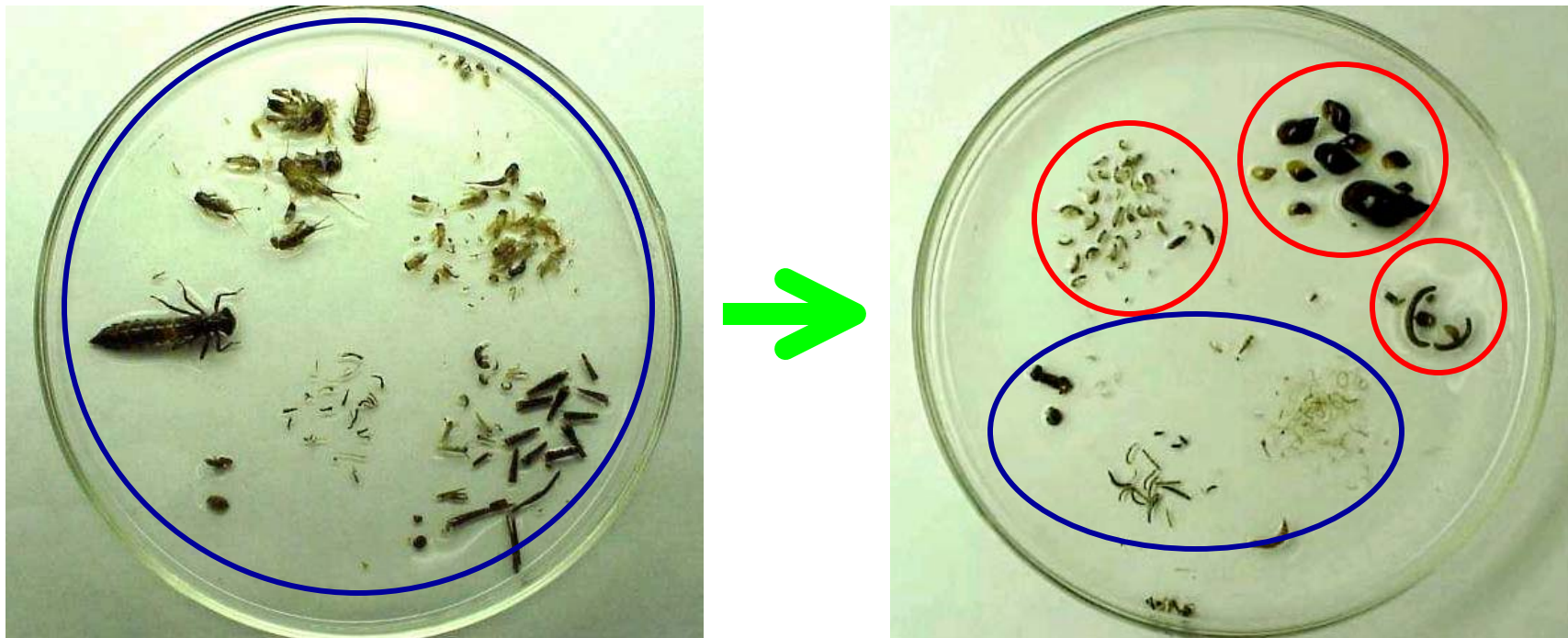
# Effects of urban stressors on aquatic life



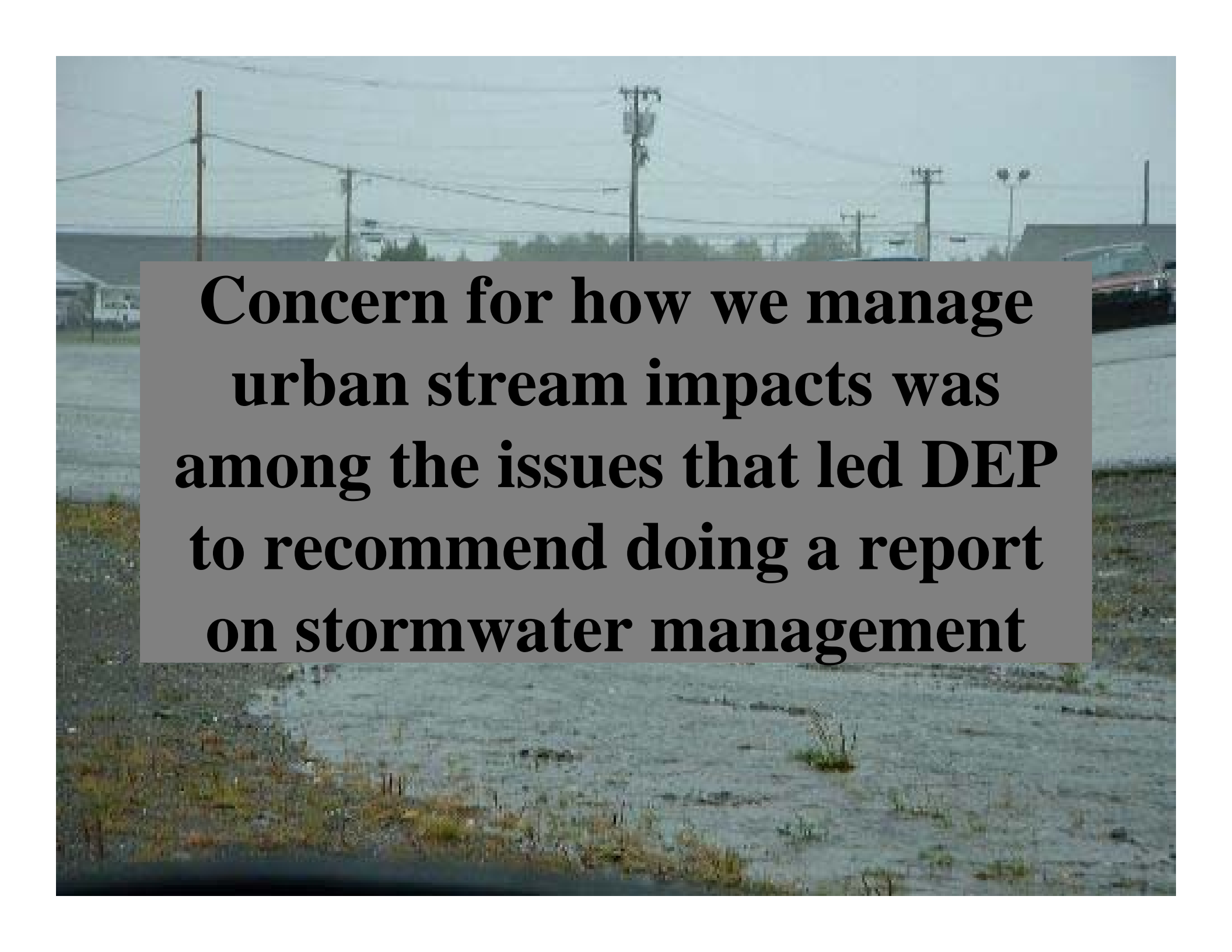
- Loss of species diversity and **sensitive taxa**
- Dominance of **tolerant, short life cycle taxa**



# Effects of urban stressors on aquatic life



- Shift of community from  
**insect** to **non-insect** taxa

A photograph of a flooded urban area. In the foreground, there is a body of water with some sparse vegetation. In the background, there are several utility poles with power lines, and some buildings are visible under a cloudy sky. A semi-transparent grey rectangular box is overlaid on the center of the image, containing text.

**Concern for how we manage  
urban stream impacts was  
among the issues that led DEP  
to recommend doing a report  
on stormwater management**

The background image shows a flooded parking lot with several cars partially submerged in water. In the background, there are utility poles with power lines and some buildings under a grey, overcast sky. The water in the foreground is dark and still.

# Stormwater Report

- DEP required to give recommendations on improving the effectiveness of stormwater management in Maine
- May include draft rules to regulate storm water discharges to impaired waters from existing and new development
- DEP required to consult with stakeholders



# Stakeholder Process

- Meetings since fall 2001
- Diverse group of participants (Appendix 1)
- Stakeholders gave input; not consensus;
- General agreement reached on “Guiding Principles”



# Guiding Principles for Stormwater Standards

1. Provide “meaningful protection.”
2. Should not foster sprawl as an unintended consequence
3. Should be understandable
4. Should not conflict with other major environmental initiatives

# Stormwater Issues

- What streams to include as “most at risk” or “sensitive or threatened” in rules
- How to deal with impaired streams?
- Current quantity/quality standards not technically adequate;
- Maintenance of “Best Management Practices” is poor;
- Rules too complex;
- Not well coordinated with requirements of federal NPDES program (admin by ME DEP)

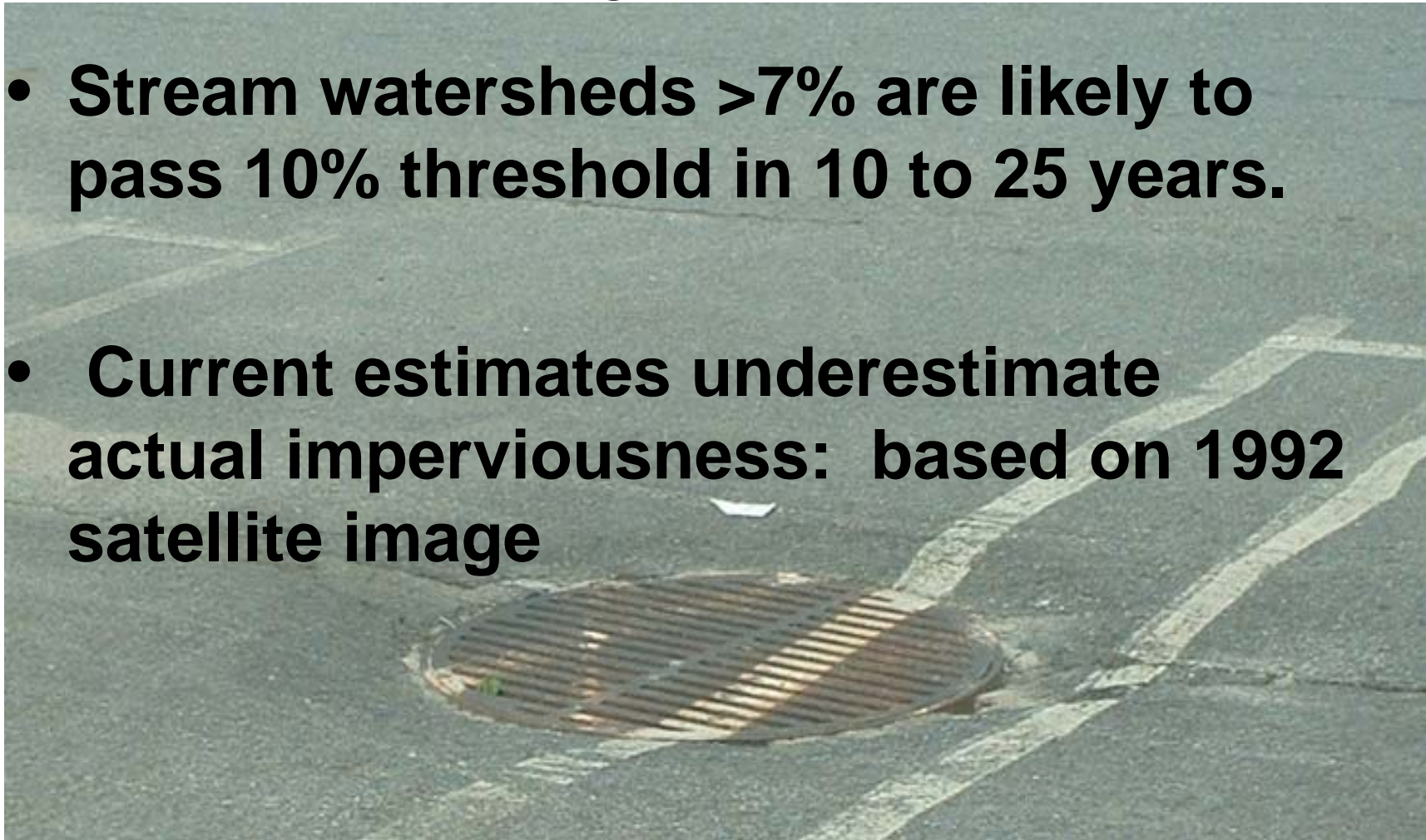


# **Relationship between watershed % imperviousness and stream quality**

- **National Studies:**
  - **10% imperviousness = significant impairment**
  - **25% or greater = severely degraded**
- **For Maine:**
  - **Some significant impairment at < 10%; some severe degradation at < 20%**
  - **11 of 12 stream sites with >10% watershed imperviousness do not meet Class B aquatic life standards; many fail to meet Class C standards**

DEP proposing to use 7% imperviousness in watershed as threshold for “most at risk” designation because:

- **Stream watersheds >7% are likely to pass 10% threshold in 10 to 25 years.**
- **Current estimates underestimate actual imperviousness: based on 1992 satellite image**



The background image shows a stream in the foreground with some vegetation. In the middle ground, there are several utility poles with power lines stretching across the frame. In the background, a large building, possibly a warehouse or industrial facility, is visible under a clear sky.

# Impaired Streams

- DEP proposing to lessen standards for new development provided measures in place for addressing existing sources of stormwater pollution.
- Cost to new development may be high if required to not contribute to the impairment.





# Recommendations

The background of the slide is a photograph of a parking lot. In the foreground, there are several cars parked, including a red car, a white car, and a dark car. In the background, there is a building with a light-colored facade and a dark roof. The sky is overcast.

# **Recommendation: Change law to allow DEP to regulate significant existing sources**

- Use TMDL assessment process
- Identify significant existing sources through rule
- Set standards by watershed through rule.
- UAA option as last resort

The background image shows a flooded industrial or parking area. In the middle ground, several large trucks are parked or moving through the water. In the background, there is a large industrial building with a tall chimney. The foreground shows some sparse vegetation and more water.

# **Recommendation: Change law to eliminate restriction on where quality standards are allowed**

Allow DEP to apply appropriate standards depending on the size of the project and the sensitivity of the watershed.




# **Recommendation: Change law to one acre disturbance threshold**

- Eliminate multi-level tiers (20,000 sq. ft. impervious, 1 acre impervious, 5 acres disturbed)
  - Simplifies the law - more understandable
  - More consistent with the NPDES stormwater threshold of 1 acre disturbance
  - Make smaller projects be eligible for “permit by rule” (similar to requirements in current Construction General Permit)

# Recommendations for Rule Changes to Address:

- “Most at risk” and “sensitive or threatened” stream watersheds
- Quality and quantity standards to provide better protection and more flexibility for applicants (compensation fees)
- Local Watershed Management Plans
- Maintenance Problems
- Innovative approaches to meeting standards



# **Non-Regulatory Recommendations**

- Technical assistance to municipalities
- Financial assistance options for municipalities or watershed districts
- Education materials for regulated community on compliance options
- Training for developers, contractors, consultants, municipal officials on proper erosion and sedimentation controls

# Summary of Proposed Statute Changes (App. 4)

- Sec 1: Revise ESC Law to limit 2005 change to existing “most at risk” watersheds
- Sec 2: Revise Stormwater Law threshold to base jurisdiction on 1 acre disturbance.
- Sec 3: Revise Stormwater Law to eliminate restriction on where quality standards apply.
- Sec 4: Revise Stormwater Law to allow DEP to regulate significant existing sources.
- Sec 5: Add transition language to Stormwater Law for threshold change.